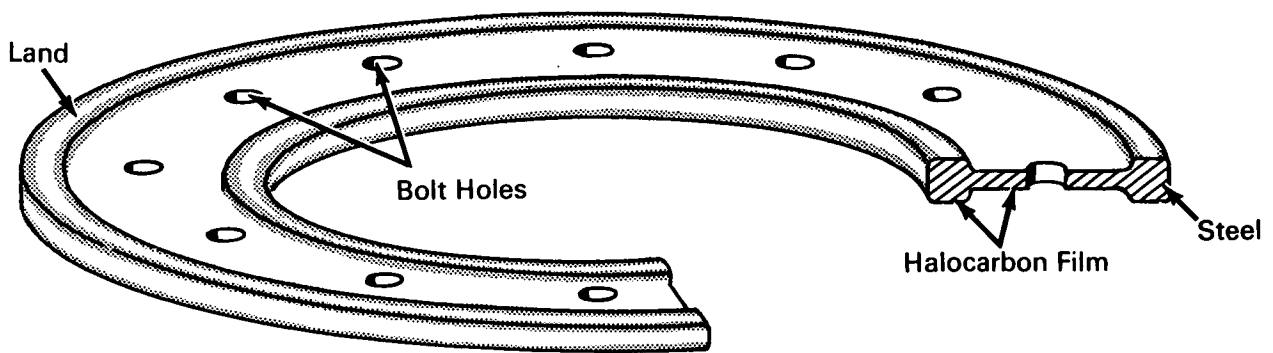


NASA TECH BRIEF



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Combination Spacer and Gasket Provides Effective Static Seal



The problem:

To design a device that will combine the functions of a spacer (shim) and static seal ring or gasket having a minimum of potential leak paths. The device is required to be effective over a wide range of temperatures down to -423°F and at pressure up to 180 psig. Conventional practice has been to use one or more spacers with a separate gasket placed in contact with each face of each spacer. An assembly consisting of one spacer and two gaskets would present at least four potential leak paths and permit relatively low unit loading on the sealing lands.

The solution:

A closely machined steel ring having narrow sealing lands on both faces and a thin coating of a commercially available halocarbon (trifluorochloroethylene) polymer. The spacer-seal permits high unit loading on the sealing lands with a nominal torque on the clamping bolts.

How it's done:

Disks of steel plate stock of selected thicknesses are machined and ground to form spacer rings with narrow sealing lands on both faces of each ring. The rings

are then dispersion-coated with a uniform film, 0.004- to 0.007-inch thick, of the halocarbon polymer. The polymer film is then cured and the sealing lands are lapped to eliminate surface irregularities and voids.

The cold-flow characteristics of the polymer film enable it to fill minor voids in mating surfaces. Several spacer-seal rings of preselected thicknesses may be stacked as required to compensate for different clearances between mating surfaces. Because of the intimate contact between the polymer films, a spacer-seal stack will have only two potential leak paths. The sealing lands will, however, bear higher unit loads which will ensure more positive sealing at all points of contact.

Note:

Inquiries concerning this invention may be directed to:

Technology Utilization Officer
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B66-10485

(continued overleaf)

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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